



International Atomic Energy Agency

OSART

**Operational Safety Review Team
History and Evolution**

**Presented at the 15th Annual Regulatory Information
Conference – Session T13 – International Experience**

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OSART Objectives

To improve operational safety at an individual nuclear power plant (NPP);

- **Objectively assess safety performance**
- **Provide useful information on opportunities for safety improvements, recommendations and suggestions**
- **Exchange information and experience**
 - **Provide Member States with good practices**
 - **Provide plant with informal advice**
 - **Broaden team members' experience**

OSART History

- **OSART programme was developed in 1982, first mission Kori NPP South Korea**
- **117 missions to 82 NPP sites in 31 countries**
- **60 follow-up visits have been conducted since it became a standard feature in 1989**

Activities in 2002

- **OSART missions to**
 - **Tricastin, France** **January**
 - **Santa Maria de Garona, Spain** **March**
 - **Angra 2, Brazil** **October**
- **Follow-up visits to**
 - **Goesgen, Switzerland** **March**
 - **North Anna, USA** **April**
 - **Belleville, France** **May**
 - **Muehleberg, Switzerland** **June**
 - **Ling Ao, China** **November**

Activities in 2003

- **OSART missions to**
 - **Nogent, France** February
 - **Civaux, France** May
 - **Angra 1, Brazil** July
 - **Rovno, Ukraine** September
 - **Tianwan, China** October
 - **Krsko, Slovenia** November
- **Follow-up visits to**
 - **Dukovany, Czech Rep.** October
 - **Tricastin, France** November
 - **Santa Maria de Garona, Spain** November
 - **Paks, Hungary** December
 - **Temelin, Czech Rep.** December

Activities in 2004

- **OSART missions to**
 - **Chasma, Pakistan** **January**
 - **Pickering, Canada** **February**
 - **Philippsburg, Germany** **April**
 - **Qinshan III, China** **May**
 - **Kashiwazaki Kariwa, Japan** **August**
 - **Zaporozhe, Ukraine** **September**
 - **Chernavoda, Romania** **October**
 - **Penly, France** **November**

OSART Effectiveness

Status of Issues at Follow-up Visits

Years [Visits]	Resolved (%)	Satisfactory Progress (%)	Insufficient Progress (%)	Withdrawn (%)
1989/90 [6]	40	43	14	3
1991/92 [10]	43	38	17	1
1993/94 [11]	46	41	13	< 1
1995/96 [5]	59	39	2	0
1997/98 [6]	45	47	7	1
1999/2000 [7]	38	52	10	0
2001/2002 [5*]	59	38	3	0

* Visits with finalized report only

OSART Overall Concept

TIME	ACTIVITY	RESOURCES
12 months before mission	PREPARATORY MEETING	2 IAEA staff 2 days
	MISSION	3-4 IAEA staff -7 external experts 3 weeks
12 to 18 months after mission	FOLLOW-UP VISIT	2 IAEA staff 1-2 external experts 1 week

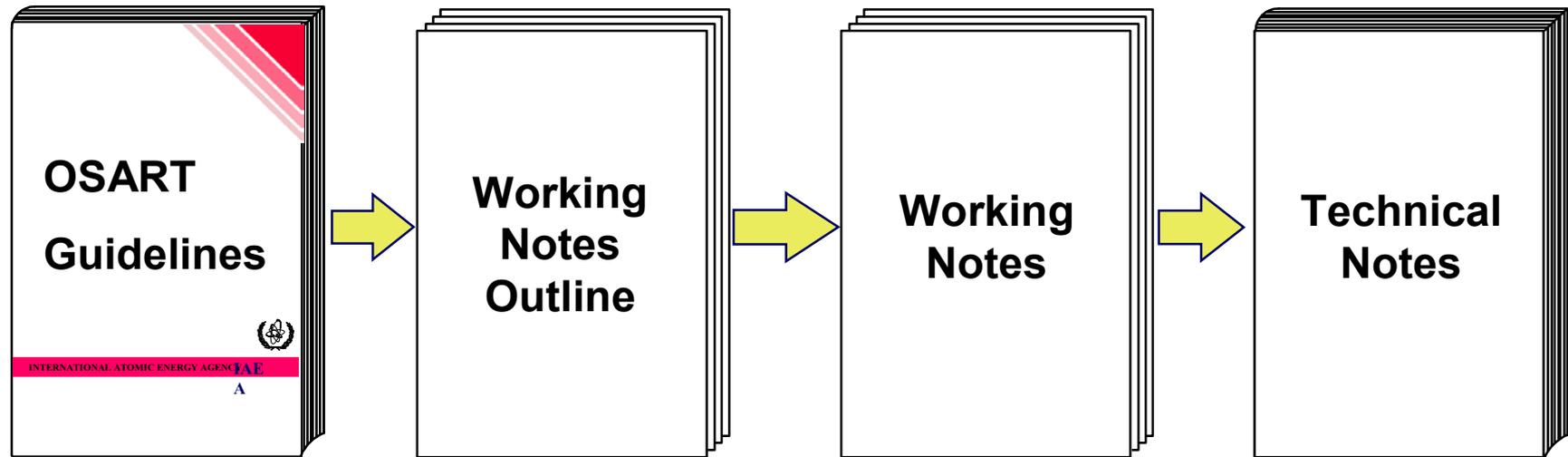
OSART Review Areas

- **Management, Organization and Administration**
- **Training and Qualification**
- **Operations**
- **Maintenance**
- **Technical Support**
- **Radiation Protection**
- **Chemistry**
- **Emergency Planning and Preparedness**
- **Safety Culture and Operating Experience Feedback (Optional)**

OSART Team

- **Team leader, assistant team leader-IAEA**
- **Nine experts from NPPs / Regulators around the world, currently the most senior persons responsible for the specific area of review, skills as a evaluator**
- **Up to three observers**
- **Cumulative nuclear experience over 250 years**

OSART PROGRAMME - Reporting Results



- **Structure and Guidance for OSART Mission**

- **Structure for team members to document their review**

- **Documented assessment of performance by team members**

- **Overviews, GPs, Issues, Recom'd'ns, & Sug'st'ns**
- **Provided to plant**

OSART Report

Foreword by the IAEA Director General

- **OSART mission is not a regulatory inspection**
- **Not a substitute of NPP overall safety status**
- **Does not rank performance against other NPPs**
- **OSART mission is a “snapshot in time” to identify areas that should be improved**
- **OSART team discusses its findings with NPP**

OSART Benefits

- **Provide senior plant management with the necessary insights to sustain and continue good self-assessment programs**
- **Provide NPP's with independent international assessment of operational safety performance**
- **Provide NPP's with valuable evaluation tools**
- **Motivation of personnel**
- **Improve public confidence through transparency of results**
- **New ideas from international perspective**
- **Improve safety level of NPP's**

OSART Lessons Learned

Drivers of Safety Service Requests

- **Government / Regulatory Authority**
- **Utility / NPP Initiative**
 - **Desire to improve safety**
 - **Transparency / Public confidence**
 - **Plant life extension / License renewal**
 - **Periodic Safety Reviews**
- **Significant Event(s)**
- **Nuclear Safety Convention**

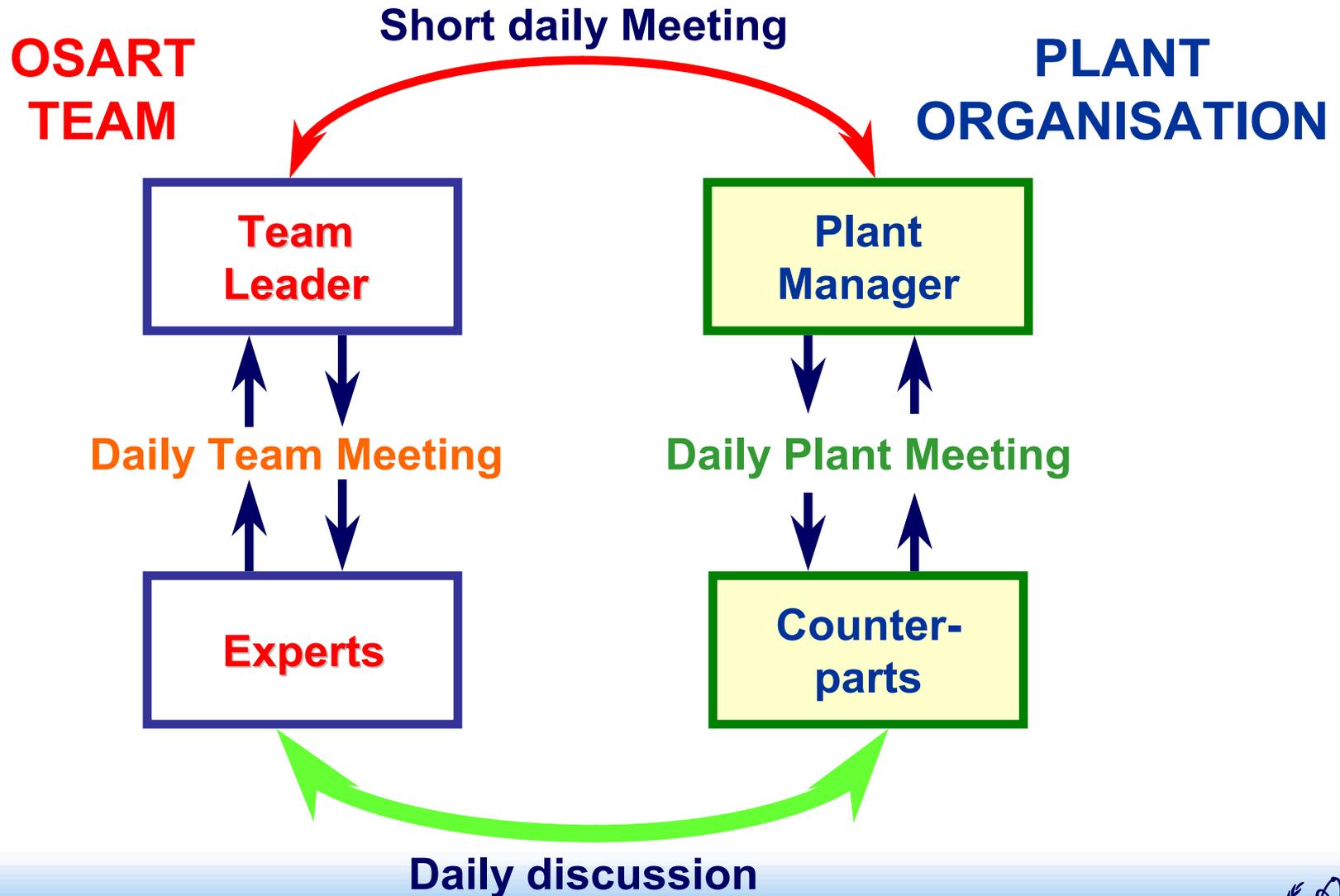
OSART Lessons Learned

- **Strong linkage between OSART and IRRT findings (when able to compare)**
- **Need to better coordinate Safety Services to establish Country Nuclear Safety Profile**
- **Need to maintain Quality of Safety Review Missions**
- **Need to provide guidance and examples for resolving repeated findings**
- **Need to enhance Safety Standards to reflect recent trends**

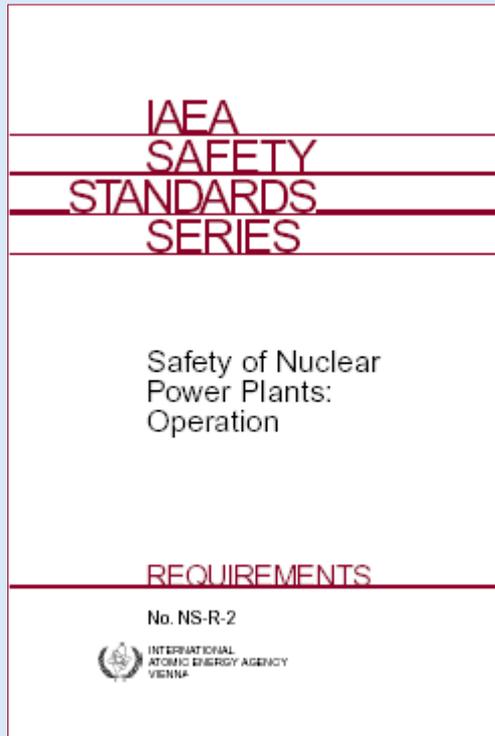
OSART Programme Improvements

- **Pilot test of draft guideline for operating experience review in OSART mission (Civaux NPP, 2003)**
- **Enhancement of OSART Team Training**
- **Communication with NPP personnel**
 - **Host Plant Peer**
 - **Daily Meeting with Plant Management**
- **Reporting Technique**
- **Results Presentation to NPP**

OSART – Oral Communication



IAEA Safety Standards : Operational Safety



List of Requirements and Safety Guides for Operation of Nuclear Power Plants

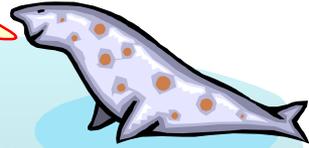
- **Safety of Nuclear Power Plants : Operation**
- **Fire Safety in Operation**
- **Operational Limits and Conditions and Operating Procedures**
- **Modifications**
- **The Operating Organization**
- **Core Management and Fuel Handling**
- **Maintenance, Surveillance and In-Service Inspection**
- **Radiation protection and Radioactive waste management**
- **The Recruitment, Qualification and , Training of Personnel**
- **Commissioning**
- **Periodic Safety Review**

OSART – Future Direction

- **Issue revision of OSART guidelines to reflect;**
 - **Requirements Safety of Nuclear Power Plants: Operation (NS-R-2, issued in Sep.2000)**
 - **Safety Guides issued in 2001 – 2003**
 - **Self assessment seminar March 2003**
 - **Technical meeting March 2003**
 - **Topical Issue Conference results**
 - **Management of Safety**
 - **Safety Culture**
- **OSART missions to include enhanced operating experience and safety culture review**
- **Feedback into Safety Standards and other publications**

**Technical Advisory Group Meeting,
March 11-14, 2003
Results**

*"It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change."
Charles Darwin*



- Management of Change
- Safety Culture
- Quality of Programmes & Processes
- Organizational Effectiveness
- Plant Material Condition
- Competent Staff
- Public Confidence, Transparency

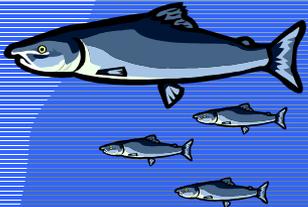
Future Challenges

Current Situation

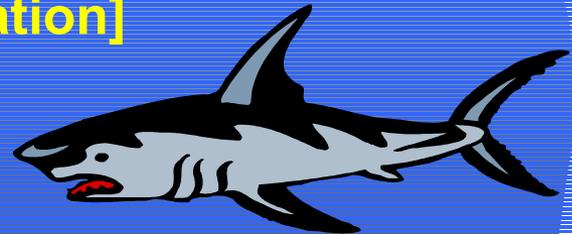
Shortage of Graduate Engineers



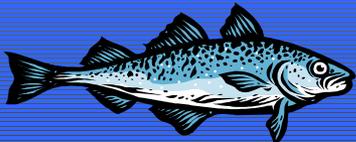
**Competitive Environment
[Deregulation/Mergers/Privatisation]**



Public - Risk Awareness



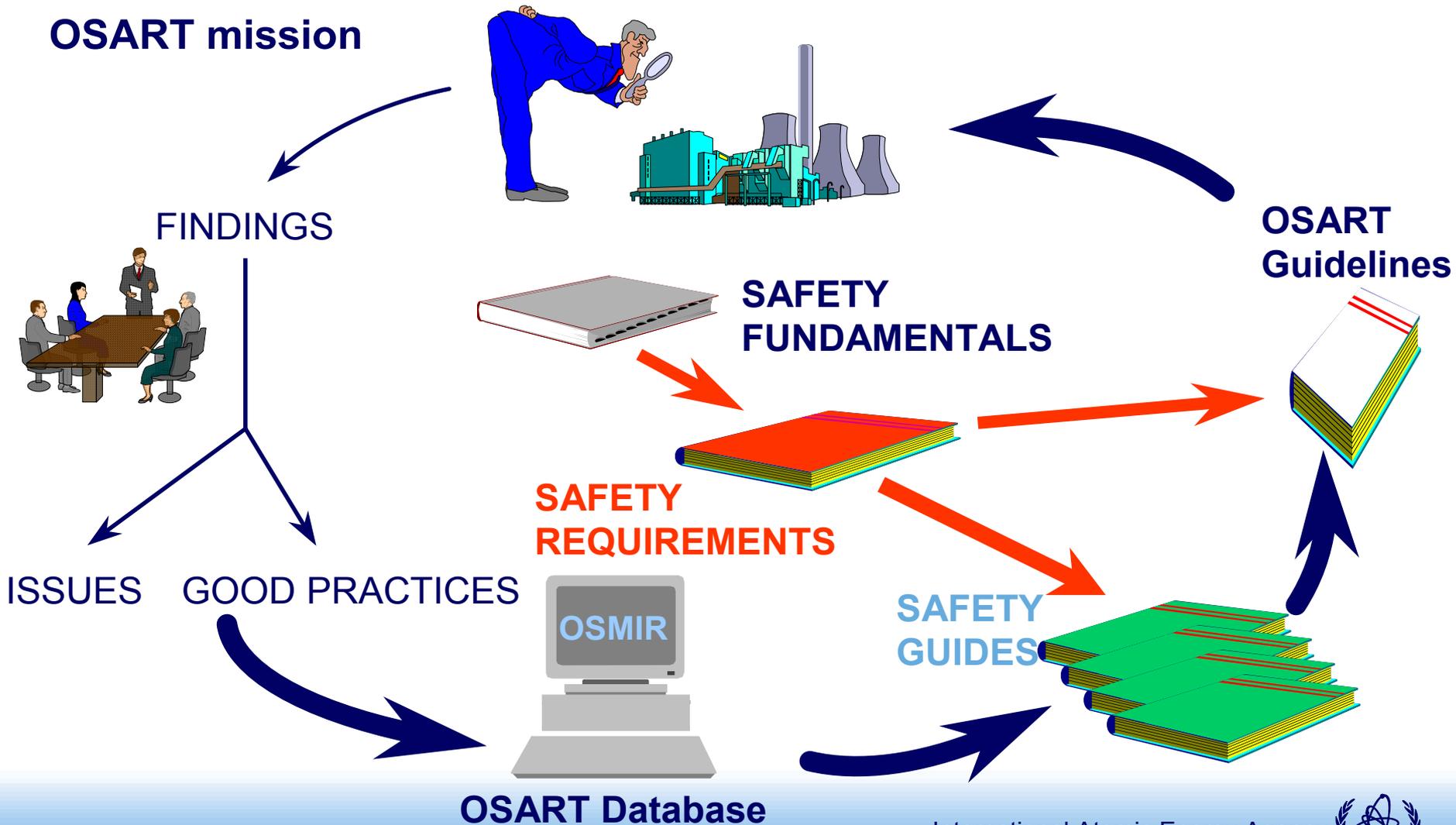
Ageing Equipment & Staff



Early Termination due to Political Decision



OSART – Feedback process



OSMIR Database

OSMIR Database

October 2002

IAEA NSNI/OSS

- Distributed in CD-ROM
- Contains results from 53 OSART missions and 33 follow-up visits from 1991
- 2200 Recommendations, 1350 Suggestions and 500 Good Practices

MISSIONS AND FOLLOW-UP VISITS

xxxx NPP, XXX	PWR 1330 MW	dd-dd mm, yyyy
CHEMISTRY		dd-dd mm, yyyy
Organization and Functions		

Issue:

The lack of policies, procedures and programmes in chemistry is inconsistent with good industry practice and is resulting in some inferior practices. The following are examples where there were no established policies or procedures:

- Programme for lifetime control for chemicals standards.
- Programme to control the use of chemicals reagents, e.g. inflammable solvents and toxic chemicals.
- Programme for quality control of chemical analysis, which includes trend analysis results and statistics treatment.
- Administrative procedure to control storage of chemicals reagents in the different laboratories.

Some examples of weaknesses associated with the lack of policies, procedures and programmes that were observed in the field are as follows:

- There were unnecessary quantities of flammable solvents, like toluene and benzene stored in the cold laboratory Unit 1 & 2.
- There was no administrative procedure to control toxic chemicals, which were stored in the cold laboratory Units 1 & 2.
- No administrative control is applied in the cold laboratories of Units 1 & 2 and Units 3 & 4 for chemicals segregation.

Lack of chemistry policies, programmes and procedures could lead to incorrect analysis and results that could lead to violation of chemicals limits or challenge plant personal safety.

Recommendation:

The plant should establish quality control policies, procedures and programmes consistent with good industry practice. These include: lifetime control for chemicals standards, control the use and storage of chemicals reagents and quality control of chemical analysis.

Plant response:

The bringing together of all laboratories within one department called the Measurements Performance and Environment



Thank you for Your attention

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